IN THE TITLE:

Please replace the title of the invention with the following:

NEAR-FIELD EXPOSURE METHOD USING CIRCULARLY POLARIZED EXPOSURE LIGHT PROJECTED ON EXPOSURE MASK HAVING OPENING FORMED WITH LENGTHWISE DIRECTIONS

IN THE SPECIFICATION:

Please amend the paragraph beginning at page 8, line 12, as follows:

Japanese Laid-Open Patent Application No. 2000-112116 and a paper "Sub-diffraction-limited patterning using evanescent near-field optical lithography", by M.M. Alkaisi et al, Appl. Phys. Lett. vol. 75, No. 22 (1999), have reported that the intensity of near-field light escaping from small openings changes between a case where ~~incidnet~~ incident light is polarized in a direction perpendicular to the lengthwise direction of the small openings and a case where incident light is polarized in a direction parallel to the lengthwise direction of the small openings.

Please amend the paragraph beginning at page 16, line 15, as follows:

In accordance with a further aspect of the present invention, there is provided an exposure apparatus based on near-field light, comprising: light source means for emitting light to illuminate a mask having an opening formed with lengthwise directions extending in orthogonal directions; and a polarization system disposed between the mask and said light source means, for polarizing the light in a direction other than the directions mentioned above. The apparatus may further comprise a detecting system for detecting the lengthwise direction of the opening, wherein said detecting system includes polarization control means for controlling the polarization direction of ~~th~~ the light at an angle of 45° with respect to the lengthwise direction of the opening, on the basis of the detection made by said detecting system. The mask may have an opening formed only in mutually orthogonal directions. Similar functions as described above are attainable with this exposure apparatus.

Please amend the paragraph beginning at page 30, line 24, as follows:

Alternatively, the front surface side of the mask 400 or the resist 720 or substrate 710 side may be disposed inside a reduced pressure vessel. In that occasion, due to the pressure difference with the atmospheric pressure which is higher than the inside pressure of the reduced pressure vessel, a pressure is applied from the rear surface side of the ~~mask 440~~ mask 400 to the front surface side thereof, such that adhesion between the mask 400 and the resist 720 can be improved. Anyway, a pressure difference is provided to create a higher pressure at the rear surface side of the mask 400, as compared with the front surface side thereof. Where the surface irregularity or waviness of the mask 400 surface or the surface of the resist 720 or substrate 710 is large, the pressure inside the reduced pressure vessel may be set at a relatively low level to increase the adhesive force, by which uneven clearance with the mask 400 surface due to surface irregularity or waviness can be removed.

Please amend the paragraph beginning at page 37, line 7, as follows:

Subsequently, the mask 400 and the plate 700 are brought into close contact with each other. More specifically, first the pressure adjusting valve 640 is opened so that the pressure adjusting means 630 introduces a high pressure gas into the pressurized vessel 610. After the inside pressure of the vessel 610 increases, the pressure adjusting valve 640 is closed. As the inside pressure of the vessel 610 increases, it causes elastic deformation of the thin film 400 so that the film is pressed against the resist 720. As a result of this, the

thin film 440 is closely contacted to the resist, within a range in which the near-field light can function to the resist 720, with a uniform pressure throughout the entire surface Where a pressure is applied in the manner such as described above, in accordance with Pascal's principle, the repulsive force acting on between the thin film 440 and the resist 720 becomes uniform. This provides an advantageous effect that no ~~targ~~ large force is applied locally to the thin film 440 or the resist 720, and this prevents local breakage of the mask 400 or plate 700 thereby.

Please amend the paragraph beginning at page 40, line 11, as follows:

After the exposure, a valve (not shown) is opened and the inside of the pressurized vessel 610 is evacuated by means of an evacuation pump (not shown) of the pressure adjusting means 600, thereby to decrease the pressure of the vessel 610. Thus, due to elastic deformation, the thin film 440 is separated (or peeled) from the resist 720. Where the pressure is reduced in the manner described above, in accordance with Pascal's principle the repulsive force acting on between the thin film 440 and the resist 720 becomes uniform. This provides an advantageous effect that no large force is applied locally to the thin film 440 or the resist 720, and this prevents local breakage of the ~~400~~ mask 400 or the plate 700 thereby.

Please amend the paragraph beginning at page 54, line 8, as follows:

The exposure process is carried out in the state described just above. More specifically, exposure light emitted from the light source unit 100 and having been transformed by the collimator lens 200 into parallel light, which has a polarization characteristic of circular polarization, is introduced into the pressurized vessel 610 through the light transmitting window 620. The light introduced into the vessel 610 passes through the mask ~~440A~~ 400A from the rear-surface side to the front-surface side thereof, that is, from the top to the bottom as viewed in Figure 8, thereby to produce near-field light escaping from the pattern as defined by the small openings 432A of the thin film 440A. The near-field light scatters within the resist 720, to expose the resist 720. If the thickness of the resist 720 is sufficiently thin, the scattering of the near-field light within the resist 720 does not expand so widely, such that a pattern corresponding to the slits of the small openings 432A, which are smaller than the wavelength of the exposure light, can be transferred to the resist 720. After the exposure, while using the pressure adjusting system 600, the thin film 440 is separated (or peeled) from the resist 720 on the basis of elastic deformation.

Please amend the paragraph beginning at page 55, line 20, as follows:

Now, a case where an exposure apparatus 1A operates to transfer a pattern formed on a mask 400A in a batch process will be explained. For manufacture of a mask 400A, Si (100) wafer was chosen for a mask supporting member 410A. Upon this Si substrate, SiN film as a mask base material 420A was formed with a thickness 500 nm, in

accordance with LPCVD (Low Pressure Chemical Vapor Deposition) method. Further, upon the mask base material 420A, a Cr film as a light blocking film 430A was formed with a thickness 50 nm, in accordance with a sputtering method. Small openings 432A (opening diameter not greater than 100 nm) of a size not greater than the wavelength of exposure light, were formed on the light blocking film 430A into a desired pattern, by means of electron-beam lithographic method. In this embodiment, the small openings 432A have their lengthwise directions extending in arbitrary directions, as shown in ~~Figure 7~~ Figure 7A.

Please amend the paragraph beginning at page 56, line 13, as follows:

Subsequently, at the surface on the opposite side of the light blocking film 430A, patterning with a size 26 mm x 26 mm was carried out to that portion where the mask 400A should be produced. Then, SiN material in that portion was removed by RIE (Reactive Ion Etching) method using CF4 gas. The remaining SiN was used as an etching mask, the silicon was etched by use of an aqueous solution of 30 wt% potassium hydroxide, being warmed at 110°C, by which Si material only at that portion to be made into the mask 400A was removed. With the processes described above, a ~~mask 400~~ mask 400A supported by a silicon wafer was produced.

Please amend the paragraph beginning at page 58, line 3, as follows:

After the mask and the resist 720 are closely contacted to each other, light of linear polarization from an SHG (second harmonic generation) laser which emits a

wavelength 860 nm, as the light source unit 100A, is projected which is then transformed into parallel light by a collimator lens 200. The resultant parallel light is then transformed through a quarter waveplate 310A into exposure light having polarization characteristic of circular polarization, and it is projected to the whole surface of the mask 400A. Exposure light thus projected on the mask 400A escapes from the small openings ~~432~~ 432A of the mask 400A surface, and near-field light of uniform intensity is produced. With this near-field light, the pattern of the small openings 432A was transferred by batch exposure, to the whole surface of the resist 720 without exposure non-uniformness.